



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/540,587

06/25/2005

Andrzej Pietrzyk

3541

24271

7590

07/06/2009

JOHN ALEXANDER GALBREATH

2516 CHESTNUT WOODS CT

REISTERSTOWN, MD 21136

EXAMINER

SRIRAMAN, NIKHIL

ART UNIT

PAPER NUMBER

3664

MAIL DATE

DELIVERY MODE

07/06/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/540,587

Applicant(s)

PIETRZYK, ANDRZEJ

Examiner

NIKHIL SRIRAMAN

Art Unit

3664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/13/2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This is a final Office Action on the merits in response to communications filed by Applicant on March 13, 2009. The amendment of claims 1-7 and addition of claims 8-10 has been received and entered. Thus, claims 1-10 are currently pending and addressed below.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9-10 recite in line 1 "a system claim according to claim 7". However, claim 7 is a method claim. Thus, if this dependency is correctly listed it is unclear whether the claim is that of a system or that of a method. If the dependency is incorrectly listed, it is unclear what dependency was intended. In either scenario, the scope of the claim cannot be determined and as a result is indefinite.

Claim 10 recites "the actual object of the object. . .". The redundant use of the word "object" renders this phrase difficult to decipher. Perhaps this was intended to state the "actual objective of the object" or the "the actual object of the modular system". In any event, the scope of this claim is uncertain as currently drafted, and thus indefinite.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Self-Assembling Machine, Applicant Admitted Prior Art, Kokaji et al., in view of Shen et al. (6,636,781 B1).

Regarding **claim 1**, Kokaji et al. discloses **a system of two-dimensional multipurpose elements** (Page 441, Col. 2) **comprising:**

a) a plurality of single solid elements which can move, connect one to one another, and disconnect one from one another, said single solid elements containing programmable integrated circuits and interlocks, (Page 441, Col. 2, note Examiner construes the microprocessor in Koji to include an integrated circuit and the interlocking design to constitute **"interlocks"**)

b) each said single solid element of the system having a plurality of casing walls with variable magnetic polarization (Page 442, Col. 2)

c) each said single solid element having a voltage source (Page 443, Col. 2),
and

d) each said single solid element containing programmed instructions
(Page 443, Col. 2).

Kokaji et al. fails to disclose, but Shen et al. does disclose multi-purpose elements that are **three-dimensional** (Figs. 2-3) with a voltage source **inside** each element (Fig. 4, item 205) in order to establish autonomous robots for multi-purpose applications (Shen et al, Col. 3, lines 20-44).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the two dimensional elements supplied by external power as disclosed by Kokaji et al. to be in three-dimensions and possess internal voltage supplies as disclosed Shen et al. in order to improve autonomy through independent power and increase multi-purpose applications through three-dimensions (Shen et al, Col. 3, lines 20-44).

Regarding **claim 2**, Kokaji et al. further discloses wherein **the casing walls are connected to each other so that their reciprocal position can be changed** (Page 443, Col. 1).

Regarding **claim 3**, Kokaji et al. fails to disclose, but Shen et al. further discloses **wherein the casing walls are connected to each other by an actuator which is connected to the programmable integrated circuit** (Fig. 4, item 220; Col. 5, lines 33-37). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the system as disclosed by Kokaji et al. to include the actuator connected to the circuit as disclosed by Shen et al. so that a means of secure connection could be controlled.

Shen et al. does not explicitly disclose the actuator is an **electroplastic actuator**, however, it would have been obvious to one having ordinary skill in the art at

the time of invention to modify the actuator Shen et al. discloses, since Applicant has not disclosed that an electroplastic actuator solves any stated problem or is for any particular purposes and it appears that the invention would perform equally well with any actuator.

Regarding **claim 4**, Kokaji et al. further discloses **wherein the voltage source is a renewable source** (Page 443, Col. 2).

5. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kokaji et al. in view of Shen et al. (6,636,781 B1) as applied to claim 4 above, and further in view of Murata et al. (5,452,199).

Regarding **claim 5**, Neither Kokaji et al. nor Shen et al. disclose, but Murata et al. does disclose **the renewable voltage source is renewable due to solar batteries** for easily supplying the module with power (Col. 4, lines 50-55).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the power source of the module system as disclosed by Kokaji et al. and Shen et al. to include a solar power as disclosed by Murata et al. as an easy way to supply the module with power.

Regarding **claim 6**, while Murata et al. does not explicitly disclose **wherein light provided to the solar batteries is carried in light pipes**, it is notoriously well known in the art that some path for light is needed to supply a solar battery with light, and so it is would have been obvious to one having ordinary skill in the art at the time of invention to modify the system as disclosed by Kokaji et al., Shen et al. and Murata et al. to employ a pathway for light in order to provide the solar batteries with light.

Regarding **claim 8**, this limitation is rejected under the same rationale as cited above for claim 6, wherein the **characteristic thereof being that the light pipes (2) carry to the integrated circuit (1) both information on the object (10) and program instructions (12)** (Note examiner construes the purpose of the light pipes to not structurally differentiate this feature and therefore not further limit the claim).

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tannie et al. (5,361,186) in view of over Self-Assembling Machine, Applicant Admitted Prior Art, Kokaji et al..

Regarding **claim 7**, Tannie et al. discloses **a method for creating three-dimensional constructions comprising the steps of:**

a) connecting and disconnecting three-dimensional single multipurpose elements depending on their reciprocal positions (Figs. 1-4; Col. 2, lines 63 – Col. 4, line 6), and

b) transmitting, from an active single multipurpose element to the memory of an integrated circuit contained in an inactive single multipurpose element, the information about a desired a virtual object to be constructed and about the successive running number that of the real structure of the inactive single multipurpose element being connected represents in the actual object constructed thus far (Col. 5, line 25 – Col. 6, line 9), and

c) deciding, by the integrated circuit, whether to activate or deactivate the said casing walls of said single multipurpose elements so that said single

multipurpose elements are linked together successively (Col. 5, line 25 – Col. 6, line 9).

Tannie et al. fails to disclose, but Kokaji et al. does disclose **wherein said single multipurpose elements have casing walls with variable magnetic polarisation and wherein the reciprocal position of said single multipurpose elements is the result of a change in of electromagnetic polarisation of said casing walls said change being accomplished by activation or inactivation of said single multipurpose elements** in order to establish a means of realasably connectign units (Page 442, Col. 2).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to modify the element system as disclosed by Tannie et al. to employ magnetic polarization on the casing walls as disclosed Kokaji et al. in order to establish a means of releasably connecting the units (Kokaji et al., Col. 3).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: NPL, Yoshida, A Self-Reconfigurable Modular Robot: Reconfiguration Planning and Experiments.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NIKHIL SRIRAMAN whose telephone number is (571)270-5797. The examiner can normally be reached on Monday through Friday, 7:30am-5:00pm, with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NIKHIL SRIRAMAN
Examiner
Art Unit 3664

N.S.
/KHOI TRAN/
Supervisory Patent Examiner, Art Unit 3664